INVESTIGATION OF LONGITUDINAL AERODYNAMIC CHARACTERISTICS OF AN AIRCRAFT MODEL WING WITH RGV FEATHER LIKE WINGLET

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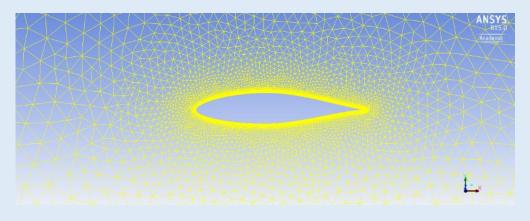


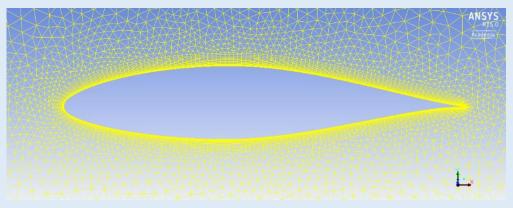
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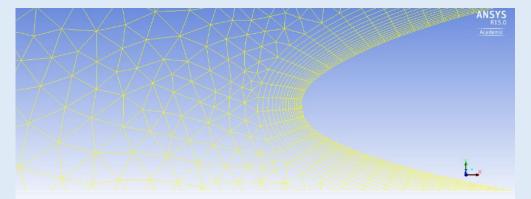
OUTLINE OF PRESENTATION

- + 3D Model Meshing
- + Contour Plot, CP Plot, Velocity Magnitude
- + Graph Analysis
- + Conclusion

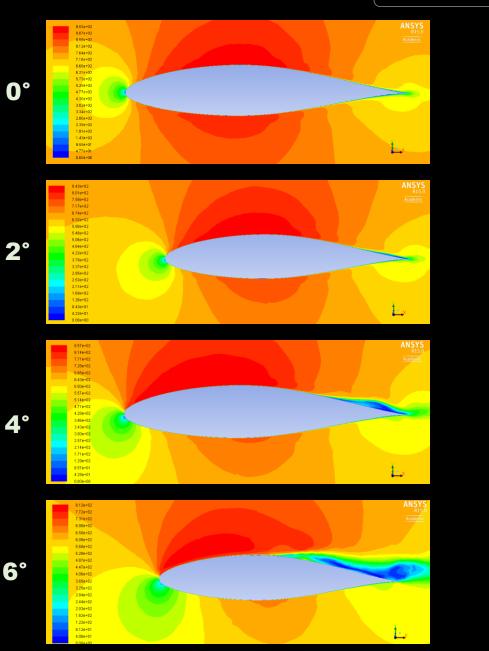


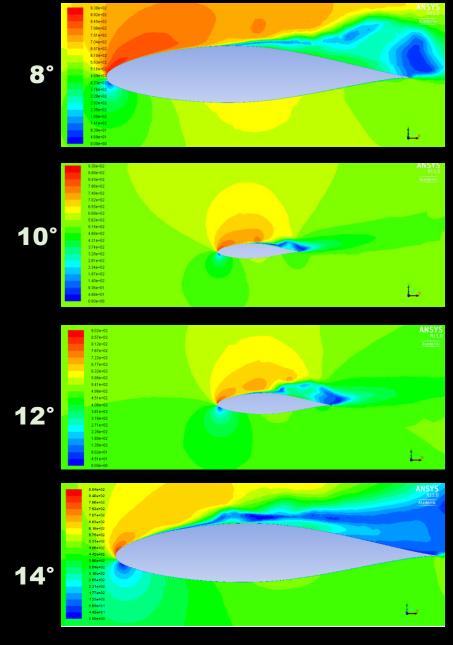






Contour Plot





ANSYS R15.0

Coefficient Pressure C_P Plot

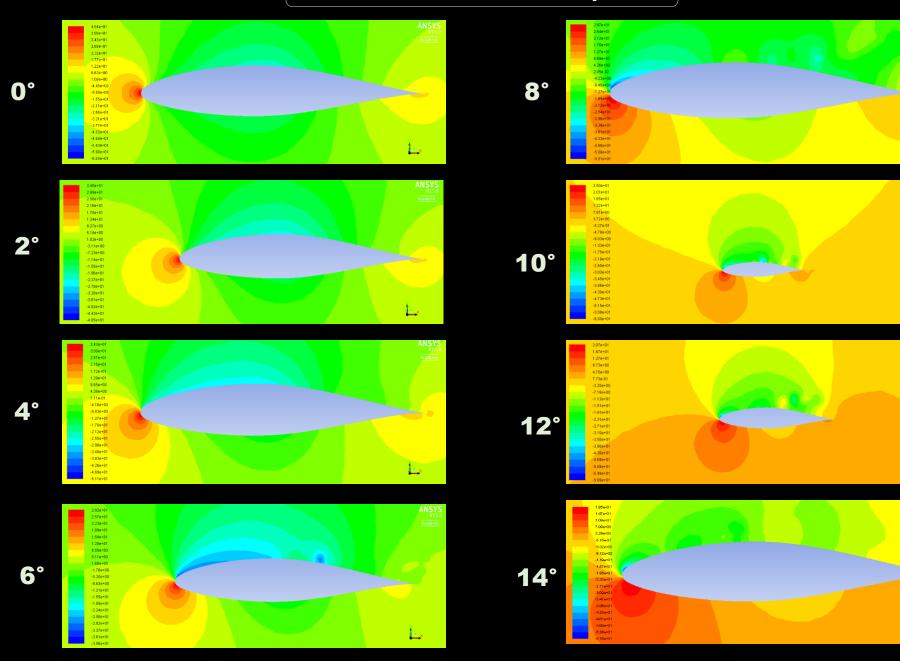
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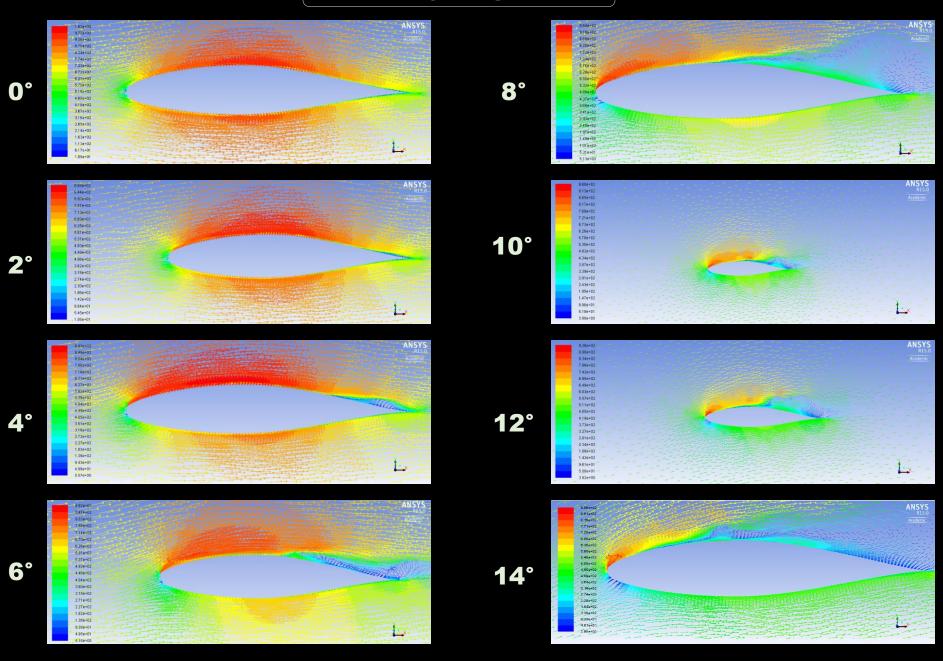
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Velocity Magnitude



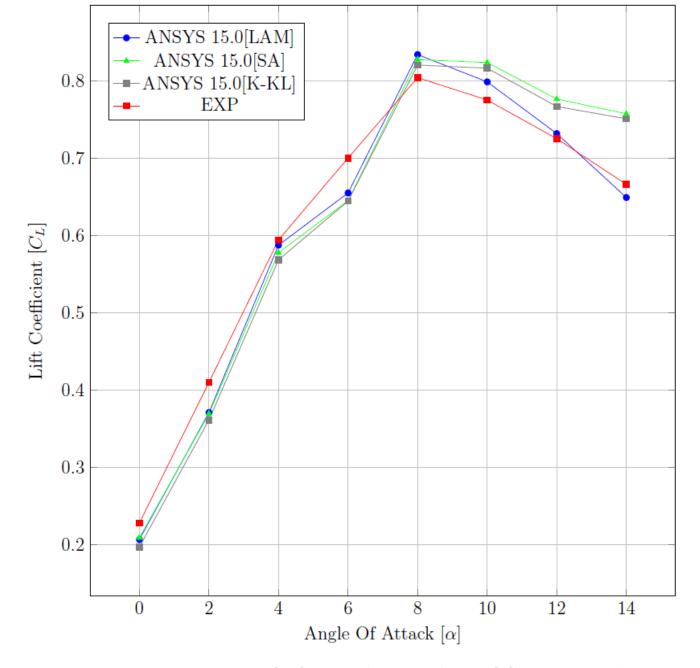


Figure 1: Graph Lift Coefficient $[C_L]$ versus Angle Of Attack $[\alpha]$ for Wing by ANSYS 15.0 and Experiment Result for Reynolds Number 1.7×10^5

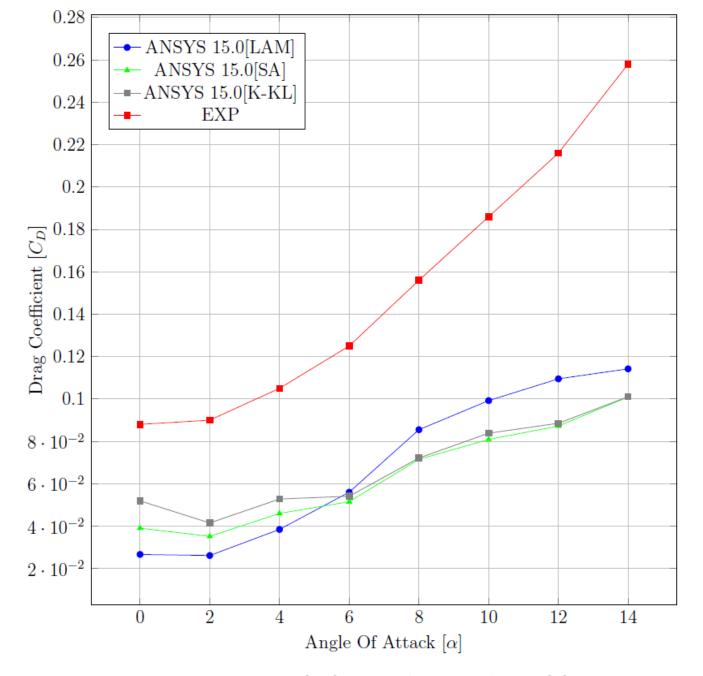


Figure 2: Graph Drag Coefficient $[C_D]$ versus Angle Of Attack $[\alpha]$ for Wing by ANSYS 15.0 and Experiment Result for Reynolds Number 1.7×10^5

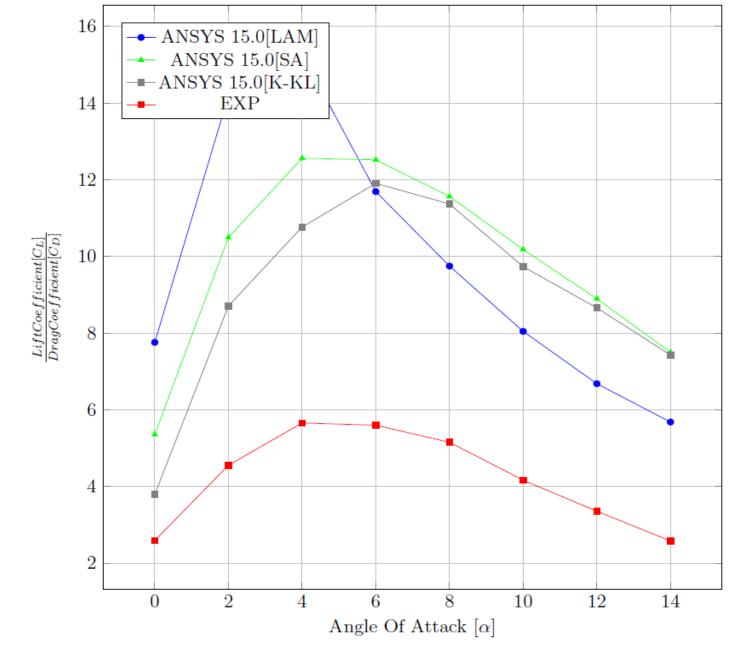


Figure 3: Graph Lift Coefficient $[C_L]$ over Drag Coefficient $[C_D]$ versus Angle Of Attack $[\alpha]$ for Wing by ANSYS 15.0 and Experiment Result for Reynolds Number 1.7×10^5

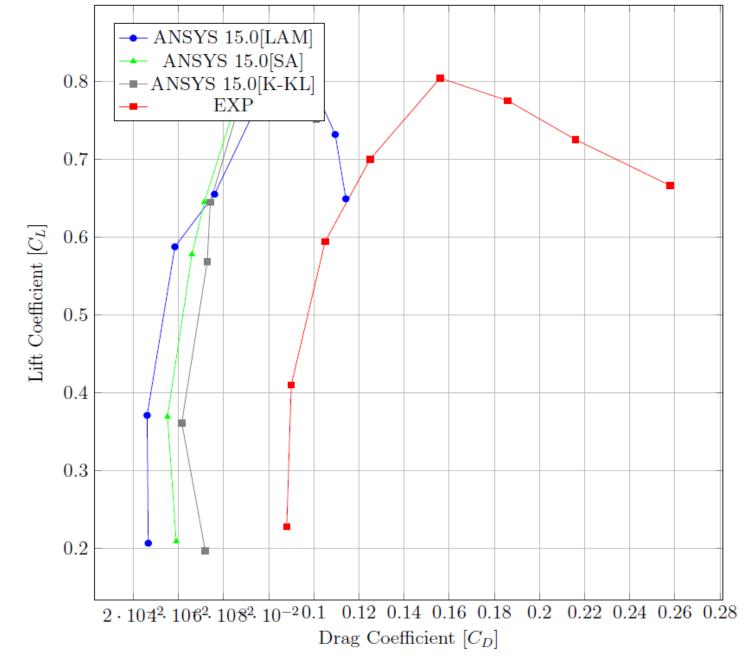


Figure 4: Graph Lift Coefficient $[C_L]$ versus Drag Coefficient $[C_D]$ for Wing by AN-SYS 14.0 and Experiment Result for Reynolds Number 1.7×10^5

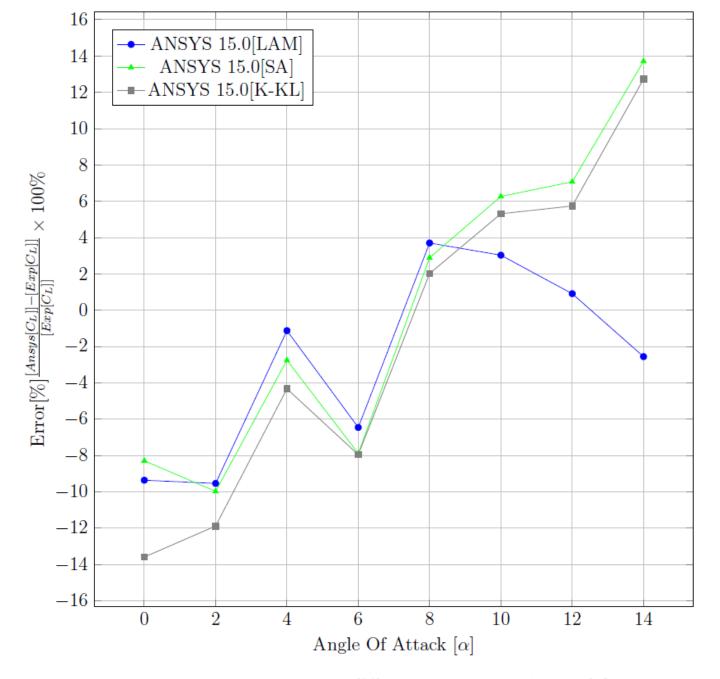


Figure 5: Graph Coefficient of Lift Error[%] versus Angle Of Attack [α] for Wing for Reynolds Number 1.7×10^5

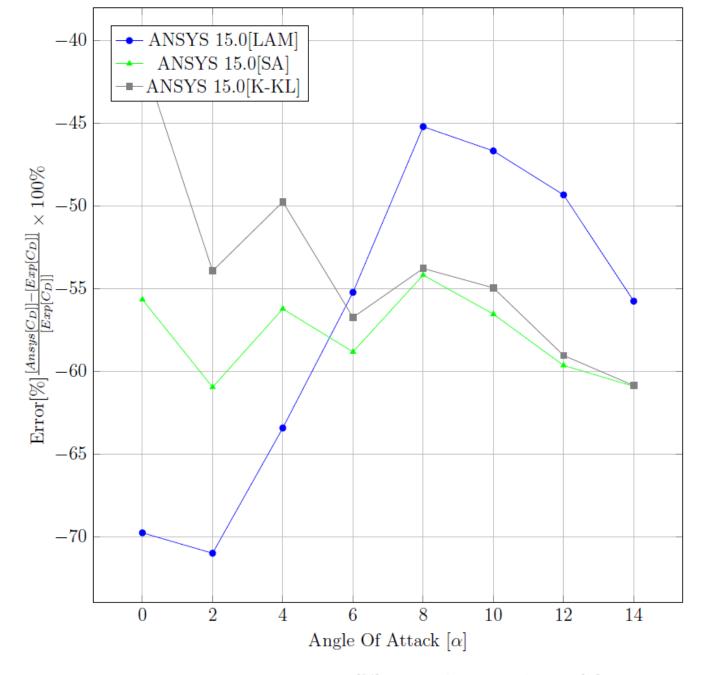


Figure 6: Graph Coefficient of Drag Error[%] versus Angle Of Attack [α] for Wing for Reynolds Number 1.7×10^5

DISCUSSION & CONCLUSION

- Different flow region cause CD Ansys value lower than Exp value
- Try to create different flow region in analysis

		Viscous Model
Laminar region	Turbulent region	Model Inviscid Inviscid Laminar Spalart-Allmaras (1 eqn) (1 eqn) K-epsilon (2 eqn) (1 eqn) K-omega (2 eqn) (1 eqn) Transition SST (4 eqn) (2 cal-Adaptive Simulation (SAS) Detached Eddy Simulation (DES) (2 cal-Adaptive Simulation (DES) Large Eddy Simulation (LES) (2 cal-Adaptive Sased) Spalart-Allmaras Production (2 col-adaptive Simulation (LES) Spalart-Allmaras Production (2 col-adaptive Simulation (DES) Strain/Vorticity-Based (2 col-adaptive Simulation (LES) Options (2 col-adaptive Simulation (LES) Ok (2 col-adaptive Simulation (LES) </td

